

Message

From: Susan Schow [schow29@comcast.net]
Sent: 1/15/2018 6:39:08 PM
To: ona.papageorgiou@dec.ny.gov
CC: 'Lacey, Pam' [PLacey@aga.org]; matt.harrison@aecom.com; 'David Lyon' [dlyon@edf.org]; Beeler, Cindy [Beeler.Cindy@epa.gov]; timakirataylor@live.com [timothy.taylor@state.co.us]; 'Dorman, Lisa' [ldorman@pa.gov]
Subject: Methane: Appendices 1.5.2 re Non-Normal Distribution of Emissions: Super Emitters
Attachments: ITRC_Methane_Appendices_1_8_2018 (3) Lacey 1.5.2 Non Normal Distribution.docx

Importance: High

Hi all,

I believe the Appendix section with the summary of methane studies and discussion of super emitters in 1.5.2 is actually from the original Characterization section moved into the Appendix so am copying Ona Papageorgiou, Section Lead, and Cindy Beeler.

Ona,

I am happy incorporate Pam's new edits and new text as seen in attachment and below into your section And David Lyon and Matt Harrison both confirm). Please let me know if you or Cindy have any reservations or comments. I will make changes to the newest version of the Characterization Appendix (given to me on Jan 9th) if you approve. Let me know.

Thanks to all!
Susan

Susan Schow, MPH
ITRC Methane Team - Program Advisor
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207-841-0534

From: Lacey, Pam [mailto:PLacey@aga.org]
Sent: Friday, January 12, 2018 10:00 AM
To: Harrison, Matt <matt.harrison@aecom.com>; David Lyon <dlyon@edf.org>; Susan Schow <schow29@comcast.net>
Subject: Re: Methane Team: Punch List - one additional requested change - Appendices 1.5.2 re Non-Normal Distribution of Emissions: Super Emitters

Thanks Matt!

----- Original message -----

From: "Harrison, Matt" <matt.harrison@aecom.com>
Date: 1/12/18 9:52 AM (GMT-05:00)
To: David Lyon <dlyon@edf.org>, "Lacey, Pam" <PLacey@aga.org>, Susan Schow <schow29@comcast.net>
Subject: RE: Methane Team: Punch List - one additional requested change - Appendices 1.5.2 re Non-Normal Distribution of Emissions: Super Emitters

I also agree with Pam's suggested changes.

Matt

From: David Lyon [mailto:dlyon@edf.org]
Sent: Friday, January 12, 2018 7:36 AM
To: Lacey, Pam; Susan Schow

Cc: Harrison, Matt

Subject: RE: Methane Team: Punch List - one additional requested change - Appendices 1.5.2 re Non-Normal Distribution of Emissions: Super Emitters

I'm fine with Pam's changes on pages 41 – 42. Schweitzke is an important paper – there are additional Fayetteville campaign papers that would also be good to reference in future versions.

David

From: Lacey, Pam [mailto:PLacey@aga.org]

Sent: Thursday, January 11, 2018 9:49 PM

To: Susan Schow

Cc: David Lyon; Harrison, Matt

Subject: RE: Methane Team: Punch List - one additional requested change - Appendices 1.5.2 re Non-Normal Distribution of Emissions: Super Emitters

Importance: High

Susan – I know this is late, but I just saw that David Lyon's summary of methane studies and discussion of super emitters in 1.5.2 of the Appendices document does not reflect the recent results of Stefan Schweitzke's June 2018 top down aerial study in the Fayetteville Shale Basin. I was hoping we would have the final basin top down-bottom-up reconciliation paper available by now, but it is not yet published. Still, we can at least reflect the learnings from Stefan's paper. And I hope there will be an opportunity to update this section once the Fayetteville basin reconciliation paper is available. I am copying David and Matt Harrison since they are the most likely to care about this section. I attached a track change but here is the section with my proposed revisions:

1.1.1 Non-Normal Distribution of Emissions: Super Emitters

A large and growing set of studies across the oil and gas supply chain shows that in any given source category, a small number of sources contribute a majority of the emissions. As a result, it has been argued that the official inventories described previously may underestimate the total volume of methane being emitted, and central estimates of emission rates (i.e. emission factors) may not capture the impact of the "fat tail" of skewed emissions distributions. However, more recently, a ground breaking study in the Fayetteville Basin showed that at least in that basin, the higher atmospheric emissions measured at mid-day by aircraft reflected the timing of higher emissions from manual liquids unloadings taking place at the time of the overflights. (Schweitzke 2018).

Unusually high emitters, commonly called "super-emitters", are infrequent. However, the impact of these few super-emitters on total emissions volume is disproportionately large. Across a variety of processes, operators, and regions, a small percentage of sites has been shown to account for a majority of emissions.

Emissions inventories are developed through extrapolating measurements made directly at emission sources to larger populations. The difficulty with this approach is obtaining a representative sample; extreme values can strongly influence average emissions, and very large statistically valid sample sizes are required to ensure these high emitters are sufficiently characterized. Table 1 below summarizes studies that discuss the discrepancies between atmospheric (top-down) measurements of methane emissions and bottom-up measurements; the former are typically much larger than the latter.

[I had no changes for the paragraph summarizing the Brandt study]

Thanks for considering. - Pam

Pamela A. Lacey | Chief Regulatory Counsel

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The American Gas Association represents more than 200 local energy companies committed to the safe and reliable delivery of clean natural gas to more than 70 million customers throughout the nation.

From: Susan Schow [<mailto:schow29@comcast.net>]

Sent: Thursday, January 11, 2018 4:41 PM

To: 'Dorman, Lisa' <ldorman@pa.gov>; cesar.alfaro@bsee.gov; y.ariel@bluefield.co; j.atkinson@bluefield.co; dbacon@utah.gov; barbery.andrea@epa.gov; beeler.cindy@epa.gov; 'Bhatt, Naishadh' <nabhath@pa.gov>; jbinder@burnsmcd.com; dburge@environcorp.com; anna.h.butler@usace.army.mil; Lindsay.Campbell@aer.ca; ncezar@ndce.ca; chattopadhyay.sandip@epa.gov; lance.e.christensen@jpl.nasa.gov; achristensen@burnsmcd.com; cclavin@ida.org; jcollins3@mt.gov; cramer@adeq.state.ar.us; bdeering@gesonline.com; steve@kairosaerospace.com; deweese.jason@epa.gov; don.dsouza@gov.bc.ca; roopa.ganapathy@canada.ca; ag5@azdeq.gov; nathaniel.gorence@hq.doe.gov; matt.harrison@aecom.com; jhegland@methanealliance.ca; jorn.herner@arb.ca.gov; kaylie.holland@alaska.gov; geojimj@gmail.com; james.f.jarrett@wv.gov; yaomin.jin@gov.bc.ca; kelly.kaletsky@epa.ohio.gov; hisanori.kawashima@konicaminolta.com; mkhan@desu.edu; christopher.konek@hq.doe.gov; kitty.kong@chevron.com; kopero@battelle.org; Lacey, Pam <PLacey@aga.org>; TRAVIS.B.LEWIS@NAVY.MIL; edward.long1@navy.mil; dlyon@edf.org; angela.marconi@state.de.us; smarlb3@gmail.com; amckittr@ida.org; adam.miller@nd.gov; ryou.minegishi@konicaminolta.com; Irene.Montero@bp.com; mmurphy262@comcast.net; anowlan@edf.org; craig.oneill@flir.com; ona.papageorgiou@dec.ny.gov; mpatil@langan.com; sreinis@langan.com; sdrichardson@gsi-net.com; j.rutherford@heathus.com; escheehl@arb.ca.gov; sanjay.shah@dep.nj.gov; bashman@earthlink.net; nsihota@chevron.com; kevin.speicher@dps.ny.gov; dspicuzza@woodardcurran.com; petestrauss1@comcast.net; skstuver@gsi-net.com; rsur86@gmail.com; timothy.taylor@state.co.us; ouppal@langan.com; laura@kairosaerospace.com; zhongmaosheng@126.com

Cc: 'Patricia Reyes' <preyes@ecos.org>

Subject: RE: Methane Team: Punch List

Hi All,

It is important to coordinate changes amongst our members so we don't have multiple versions being editing simultaneously. If you insert any edits directly within the document, please post the revised version of the document with the new date and your initials and/or send directly to me for posting asap. We are only fixing items as noted in the punch list (see previous emails) or reviewing the document to ensure previous comments/edits have been incorporated.

SharePoint website folder:

<https://itrcweb.sharepoint.com/Methane/Forms/AllItems.aspx>

Team webpage:

<https://www.itrcweb.org/Team/Private?teamID=77>

under:

Evaluation of Innovative Methane Detection Technologies > Document Drafts

The ITRC has offered their generous assistance with edits and will complete by tomorrow (Friday) at COB. At that time, I will incorporate these changes with David's latest revision and notify all. Stay tuned for an email from me indicating the newest version is posted (no later than Monday, Jan 15th).

Thanks to all!

Susan

Susan Schow, MPH

ITRC Methane Team - Program Advisor

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From: Dorman, Lisa [mailto:ldorman@pa.gov]
Sent: Wednesday, January 10, 2018 8:40 AM
Subject: Methane Team: Punch List

Thank you to everyone who participated in yesterday's team call. As discussed, we are against a deadline and appreciate everyone's efforts to get us back on track.

We worked through several items on the punch list and are looking for timely follow up on several items. We are making every attempt to stay on schedule. The document on the website is our most up to date, this is your time for one last review. Do not worry about numbering or formatting, that is being handled by ITRC staff. Please focus on content, missing items or any confusing or conflicting information. **All comments, edits, and source citation information submitted to Susan no later than COB January 22nd.**

The punch list with notes generated during the call can be found on our page at:

https://itrcweb.sharepoint.com/_layouts/15/guestaccess.aspx?docid=1027c7e95870b4fc58ec9ec68fc2bd2dc&authkey=AcUeONpLCtr4jZpzfnLOYKU&e=S8PdMn

Please forgive us on spelling or any errors. We attempted to capture everything during the call. If you have any questions, please contact either Lisa or Susan.

For the items that were not covered or if you can offer any additional assistance, please contact Lisa, Susan or Tim as soon as possible. ITRC staff has taken on several items and will have those back to us by COB Friday, including Table 5 which will need input by several members to complete it. We will also be reaching out directly to individuals over the next few days to finalize sections.

Again, thank you for all the work you have put into this effort. We understand it is a volunteer effort and our regular work loads are often changing and always increasing. As we approach the external review, please know your time and input is appreciated.

Do not hesitate to contact us with any questions, concerns or comments.

Thanks,
Tim, Susan, and Lisa

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